



# Status of OCO-2 and OCO-3

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# Status Summary

## OCO-2 Status

- Observatory Status: **Nominal**
  - Degradation of z-axis gyro in the inertial measurement unit
- Instrument Status: **Nominal**
  - Most recent decon - 4 - 11 March 2019 executed nominally
- Science Status: **Nominal**
  - ACOS/GOSAT version 9 – 2013 Run completed
  - “Build 10” testing ongoing

## OCO-3 Status

- Successfully Launched on 4 May and docked with ISS on 6 May
- Installation on JEM-EF module on 10 May

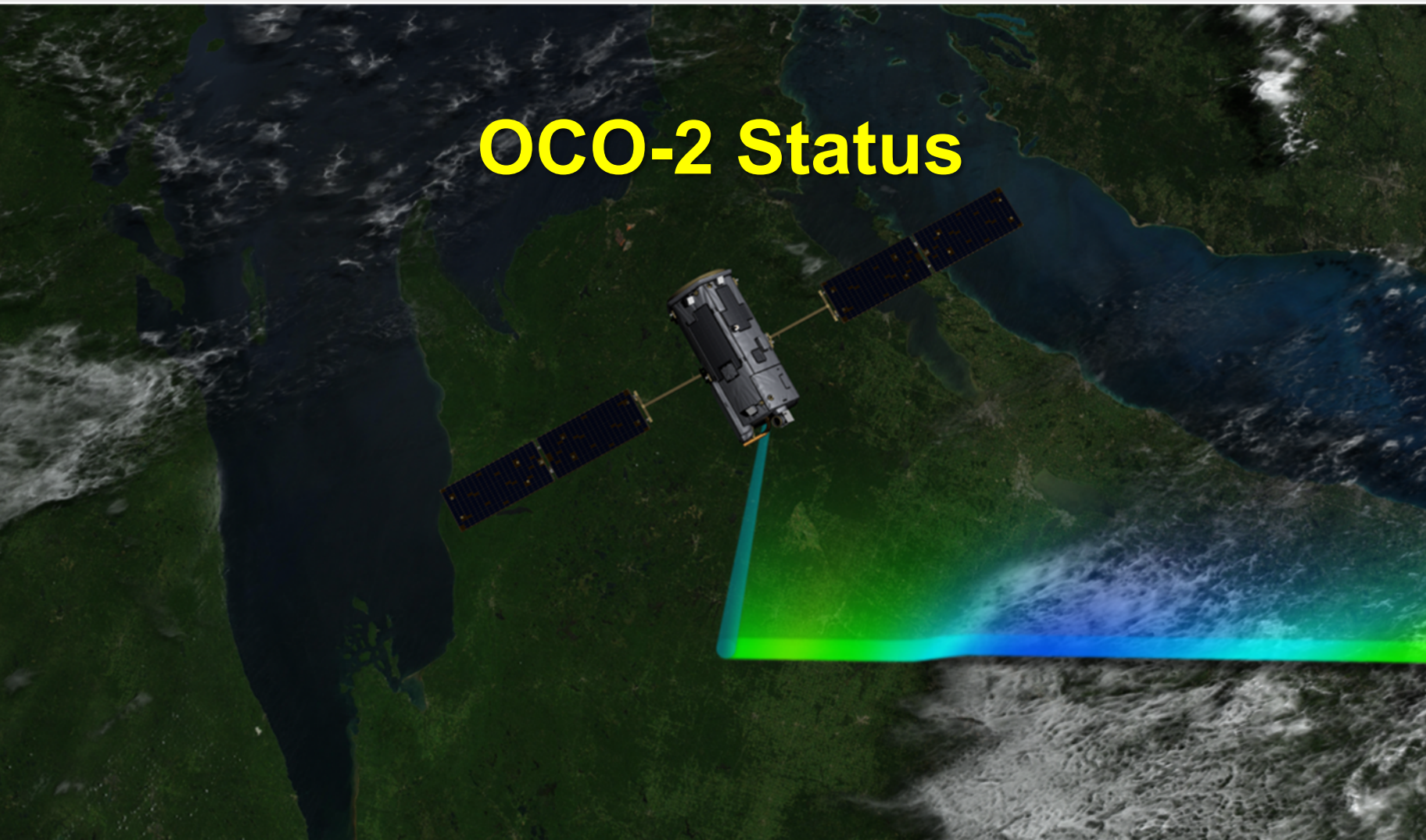
## GeoCarb Status

- $\delta$ -PDR passed, preparing for Mission Confirmation Review





# OCO-2 Status



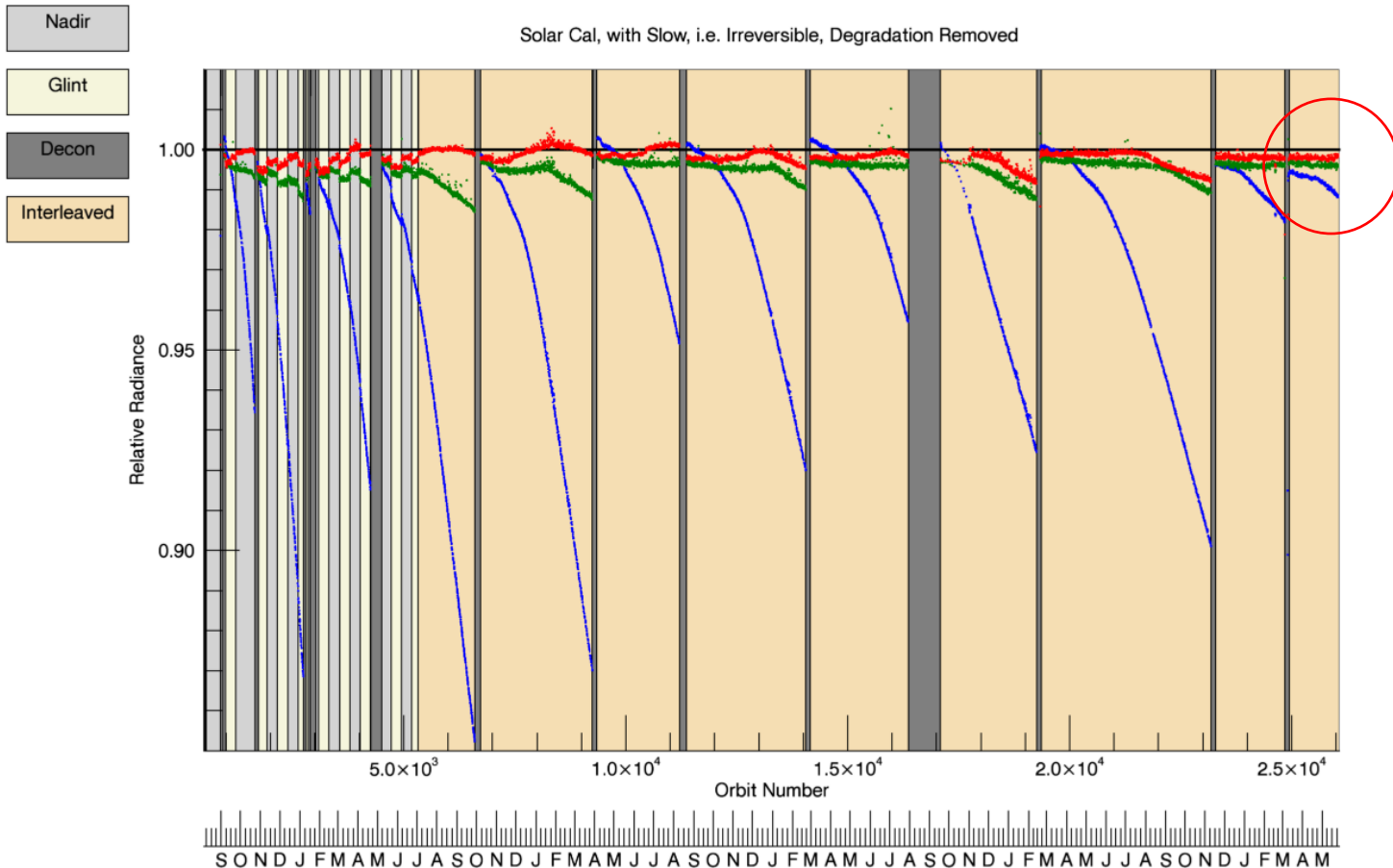


# Update on Inertial Measurement Unit Issue

- The z-axis gyro in the inertial measurement unit (IMU) that works with the star tracker has a the spacecraft attitude continuing to degrade
  - The Star Tracker is the primary pointing reference. The IMU is only needed when the Star Tracker is occulted by the Sun or Earth
- A flight software is under development to remove dependencies on the IMU. Those changes are currently under way
- Science impacts of the loss of the IMU
  - Will not affect nominal science operations
  - Will preclude future **Full Moon Lunar Calibration** and **Solar Doppler calibration** operations due to obscuration of star tracker field of view by the disk of the Earth – **neither loss will compromised routine calibration**
- Star tracker occultations by the Earth will also complicate the scheduling of:
  - The second downlink each day to the Alaska Satellite Facility
  - **Observations of high latitude TCCON stations (Sodankyla, Fairbanks, and East Trout Lake) may have to be truncated**



# Throughput Trending



March 2019 Decon restored throughput to > 99% in all 3 channels.



# Completed Parts of B10 Test Plan

- Quick test set (QTS) definitions have been developed and produced
- Baseline QTS : on B8/B9
- ABSCO testing complete : 4 tables delivered, 2x H2O, 2xO2
  - ABSCO v5.1 defined (no A-band scaling applied)
  - Test 7 : ABSCO setup for EOF generation (10 hPa constraint)
  - Test 4 : ABSCO setup for L2 processing (4 hPa constraint)
- EOF analysis (without final L1b)
- Updated Solar Model
- Test 15 : b10-new-absco-baseline
  - Evaluate effects of new ABSCO when coupled with new EOFs
- Test 18 : b10-new-l1b-no-eof
  - Evaluate new L1b, create base data for new EOFs specific to B10 L1b and new ABSCO
- GEOS-5 FP-IT near-real-time aerosol (Compare to v10-baseline)
  - Test 16 : aerosol-half – aerosol prior covariance reduced by half (in log space)
  - Test 17: aerosol-quarter– aerosol prior covariance reduced by half (in log space)



# New B10 Baseline and Next Tests

- Updated L1B – how does v41 to v42 change the L2 b10 baseline?
- New B10 Baseline will be based on :
  - v5.1 ABSCO
  - GEOS-5 Aerosols (aerosol-half)
  - ARP v4.1 files
  - Solar model
  - EOFs Chris made recently
- Next Tests
  - a) Tighter Psurf prior constraint
  - b) Quadratic albedo dependence
  - c) CO<sub>2</sub> scaling retrieval
  - d) Band offsets
  - e) Updated SIF prior
  - f) Updated TCCON Prior
- Beyond these 5 categories, we have very minor things: what to retrieve in terms of temperature, convergence criteria, more general changes to the CO<sub>2</sub> prior covariance matrix. Test (c) above could motivate the last of these, depending on the results.





# Call for Contributions to a Special Issue of Remote Sensing on CO<sub>2</sub> and CH<sub>4</sub>



*remote sensing*

## *Special Issue*

### Remote Sensing of Carbon Dioxide and Methane in Earth's Atmosphere

#### *Special Issue Editor:*

**Dr. Prabir K. Patra**

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**Dr. Thomas Lauvaux**

Pennsylvania State University

**Website:** [www.mdpi.com/si/18603](http://www.mdpi.com/si/18603)

**Submission Deadline:** 31 May 2019

IMPACT  
FACTOR  
3.406

Deadline Being Extended

Carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>) are the two most important greenhouse gases that have led to a significant fraction of the increase in earth's surface temperature in the past 100 years. This Special is dedicated to the past progress and new developments in satellite remote sensing of long-lived greenhouse gases, with a focus on CO and CH<sub>4</sub>.



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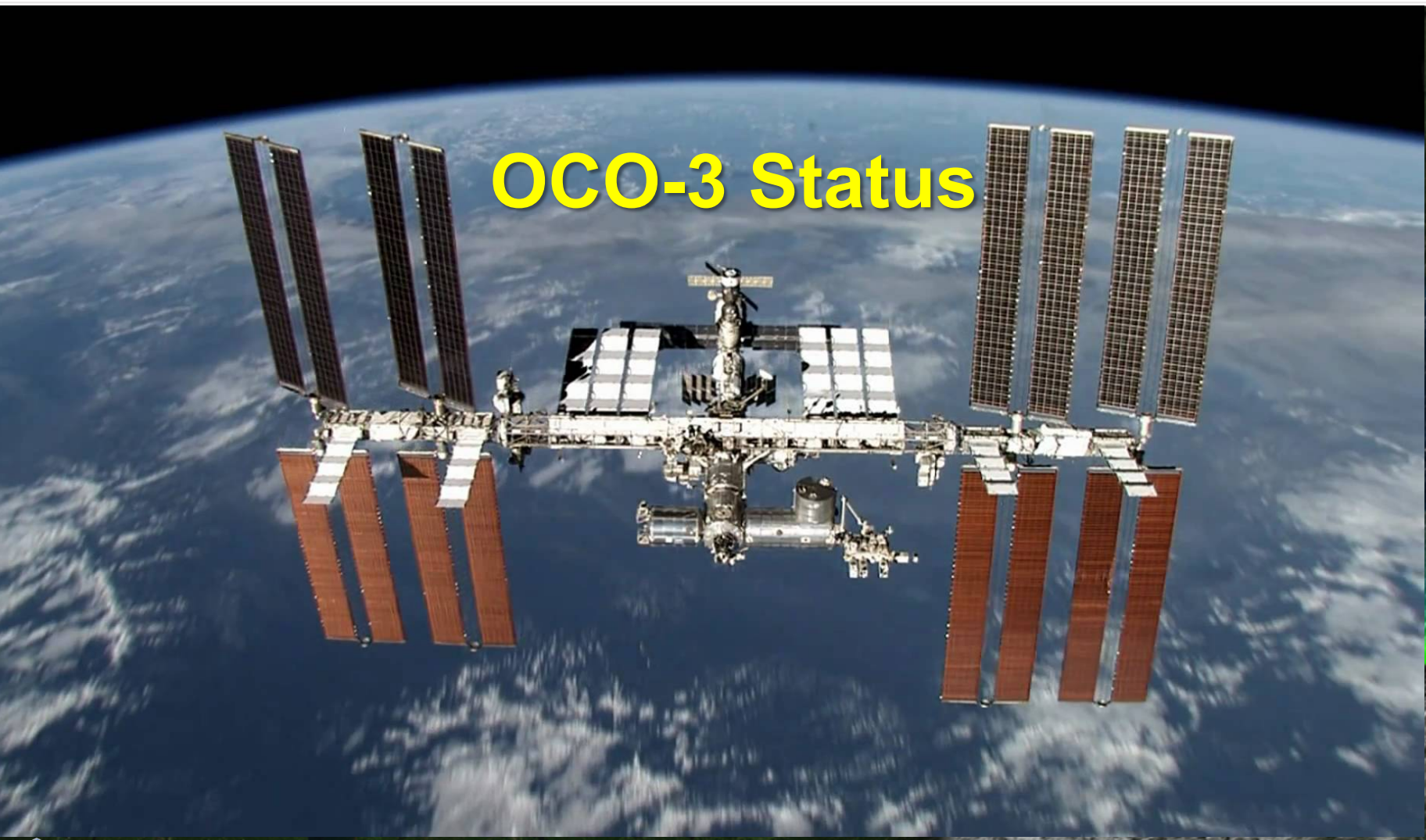


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# OCO-3 Status





# OCO-3 Status and Near Term Plans

- Pointing Mechanism Assembly (PMA) calibration is ongoing
  - Functionality verified last week
    - Exposure times on the context cameras being adjusted
  - PMA Calibration starts tomorrow and will proceed through the next two weeks
- June 20<sup>th</sup> start cool down of FPAs
  - First light expected to occur on 21 June
- Calibration commences immediately after first light
  - PMA calibration with flight instrument field of view
  - Radiometric and spectroscopic calibration commences
- Science checkout will commence in parallel with calibration activities
  - Continuing to evaluate the observing strategy, software and sequence planning process
- IOC expected to be complete around August 7th
- Post Launch Assessment Review (PLAR) tentatively set to August 9th





# OCO-3 External Context Camera Checkout



Coast off Western Sahara



Southeastern Chad, ~50 km south of Ouaddaï



# Key Near Term Activities

Planned Date	Activity Description
2 Jun	GeoCarb Science Team Meeting, Sapporo, Hokkaido, Japan
3-5 Jun	IWGGMS-15, Sapporo, Hokkaido, Japan
10-12 Jun	CEOS AC-VC, Tokyo, Japan
17-20 Jun	CALCON, Logan Utah
21 Jun	OCO-3 First Light
30 Jun-5 Jul	2019 RRV Campaign
26-29 Aug	Chapman Conference: Carbon-Climate Feedbacks, San Diego
10 Nov	OCO-3 L1b Product Delivered
9-13 Dec	2019 Fall AGU Meeting, San Francisco